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1678 7590 05/30/2007 MARSHALL & MELHORN FOUR SEAGATE, EIGHT FLOOR TOLEDO, OH 43604			EXAMINER CHANG, JUNGWON	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/915,188
Filing Date: July 25, 2001
Appellant(s): DUTE ET AL.

Stephen G. Kimmet
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/16/2007 appealing from the Office action
mailed 8/8/2005.

Art Unit: 2154

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,014,238	McLeish et al.	5-1991
5,469,150	Sitte	11-1995

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 86-90** are rejected under 35 U. S. C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, claim 86 recites two physical circuit packages in simultaneous communication with a single controller. The Examiner can find no reference to this embodiment in the disclosure as originally filed. Applicant has cited page 3, lines 4-12, in support of "simultaneously" receiving a condition from a

sensor and sending commands to an actuator. However, this passage refers to the sensing of inputs and outputs by a single physical circuit package of the invention and makes no reference to the controller.

Furthermore, the disclosure does not indicate that the controller itself receives conditions from the sensor and sends commands to the actuator. Rather, this function is disclosed as performed by the physical circuit package. The controller is disclosed only as receiving status data from and sending command data to the physical circuit package (see pg. 6, lines 25-28). Even if the point controller can be construed as performing these functions, the point controller is claimed as being part of the physical circuit package and not part of the recited "controller." See claim 87. Therefore, the disclosure also fails to provide proper support for a controller which is capable of receiving condition data from a sensor and sending commands to an actuator, irrespective of whether these sending/receiving functions are performed "simultaneously."

Moreover, the passage cited page 3, lines 4-12, of the specification is in direct contradiction to the limitation that each physical circuit package is "electrically connected directly, exclusively, and physically to a single sensor or a single actuator, but not both simultaneously." That is, the passage clearly implies that each physical circuit package is in fact capable of being connected to at least one sensor (input) and one actuator (output) simultaneously. Fig. 1 illustrates just such an embodiment. The disclosure makes no mention of a circuit which is limited to exclusively being connected to only one of a sensor or an actuator. Therefore, the disclosure also fails to provide

proper support for this limitation of the claims.

3. The following is a quotation of the second paragraph of 35 U.S. C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 86-90** are rejected under 35 U.S. C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 86 recites that each controller is capable of "simultaneously" receiving a condition from a sensor and sending commands to an actuator. The term "simultaneously" is a relative term which renders the claim indefinite. The term "simultaneously" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In Remarks filed 5/9/05, Applicant attempts to make a distinction between the sequential processing of the prior art and the claimed simultaneous processing. However, it is not clear that such a distinction is in fact proper, and the distinction does not appear to be supported by the original disclosure. Specifically, pg. 14, lines 25-27 recite:

For each of the output modes corresponding input modes can be used simultaneously, specifically Mode 1 with Mode 2, Mode 4 with Mode 5 and Mode 6 with Mode 7. Within appropriate signal ranges different modes can be dynamically invoked **sequentially** (emphasis added).

This passage clearly suggests that the term "simultaneously" actually includes sequential operation of the modes. The Examiner notes that, as understood by one of ordinary skill in the art, sequential processing refers to the ability of a single processor

to handle more than one task "simultaneously" by stepping through the different tasks in sequence. Parallel processing is another manner for handling multiple tasks simultaneously by handling each task on a separate processor. However, the disclosure makes no mention of parallel processing and, indeed, discloses only a single processor in the controller. Therefore, the Examiner interprets that the term "simultaneously" includes sequential processing.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 86-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLeish et al. (US 5,014,238) (hereinafter McLeish) in view of Sitte (US 5,469,150).

7. As for claim 86, McLeish discloses a new comprehensive interface circuit for simultaneously sensing input and output devices, comprising:

a first physical circuit package (input-output device 2, Fig. 2) having a first electrical terminal, a second electrical terminal (fig. 5; col. 8, lines 19-22) and a plurality of mode circuits disposed thereon, wherein said plurality of mode circuits can accomplish digital input, digital output, analog input, and analog output (col. 3, lines 30-

48) and said first electrical terminal and said second electrical terminal being capable of electronic communication with each of said plurality of mode circuits (cot. 4, lines 30-58; cot. 5, lines 25-28; col. 8, lines 19-22);

a second physical circuit package (input-output device 2, Fig. 2) having a first electrical terminal, a second electrical terminal (fig. 5; col. 8, lines 19-22) and a plurality of mode circuits disposed thereon, wherein said plurality of mode circuits can accomplish digital input, digital output, analog input, and analog output (col. 3, lines 30-48) and said first electrical terminal and said second electrical terminal being capable of electronic communication with each of said plurality of mode circuits (cot. 4, lines 30-58; cot. 5, lines 25-28; col. 8, lines 19-22); and

a controller (MP 3, Fig. 2) that is external to said first physical circuit package and said second physical circuit package, said controller capable of simultaneously receiving a condition from each sensor and being capable of simultaneously sending commands to each actuator (col. 3, line 52 - col. 4, line 3; col. 7, lines 3-7, "sensing an analogue input into the input-output device 2, i.e., physical package from the Resistance Temperature Device or thermister 4, i.e., sensor"; col. 3, lines 46-51; col. 6, lines 18-26).

8. McLeish discloses four terminals for each channel (col. 4, lines 30-34). Nothing in McLeish requires that all four terminals be used for each connected device.

Nonetheless, McLeish does not specifically disclose that the physical circuit packages are electrically connected directly, exclusively, and physically to single sensor or single actuator, but not both simultaneously, via only first and second terminals. Sitte teaches

a sensor having two terminals (col. 1, lines 39-54, "U. S. Pat Noover a wide range."). Such a sensor would inherently be coupled to a control circuit through only two terminals (e.g. first and second terminals). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify McLeish by electrically connecting the physical circuit packages directly, exclusively, and physically to single sensor or single actuator, but not both simultaneously, via only first and second terminals, because this would allow for coupling with a two-terminal sensor such as that disclosed by Sitte.

9. As for claim 87, McLeish discloses the comprehensive interface circuit of claim 86, wherein each physical circuit package further has a point controller disposed thereon (central processing unit 6, Fig. 1).

10. As for claim 88, McLeish discloses the comprehensive interface circuit of claim 86, further comprising an electrical bridge (address bus 7, Fig. 1).

11. As for claim 89, McLeish discloses the comprehensive interface circuit of claim 86, further comprising a monoline serial interface (data bus 11, Fig. 1).

12. As for claim 90, McLeish discloses the comprehensive interface circuit of claim 86, wherein said first physical circuit package is electrically connected to a single sensor and said second physical circuit package is electrically connected to a single actuator

(This embodiment clearly falls within the scope of McLeish's teachings, since McLeish teaches that any number of sensors or actuators may be attached to each input-output device. See col. 4, lines 23-29)

(10) Response to Argument

A. Objection to Drawings under 37 CFR 1.83(a)

(1) Appellant's Argument: Applicants assert that Fig. 1 shows how a physical circuit package 15 and a single controller 14 are connected together and that there is no reason to show how cumulative physical circuit package 15 are connected to the same controller 14, since one skilled in the art recognizes how additional physical circuit packages are connected to the single controller 14.

Examiner's Response: Appellant is directed to read 37 CFR 1.83(a) which recites:

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). In addition, tables and sequence listings that are included in the specification are, except for applications filed under 35 U.S.C. 371, not permitted to be included in the drawings.

The intended scope of the claims would not be apparent to one of ordinary skill in the art. Therefore, the drawings must show every feature of the invention specified in the claims. The embodiment of claim 86, which has two physical circuit packages and a single controller, must be shown or the feature(s) canceled from the claim(s).

Therefore, the objection is properly maintained.

B. Objection to Specification under 37 CFR 1.75(d)(1) and MEPE 608.01(o)

(1) **Appellant's Argument:** Applicants traverse this objection by asserting that the disclosure of the present invention and common knowledge in the art, provide for every feature of the claimed invention.

Examiner's Response: The intended scope of the claims would not be apparent to one of ordinary skill in the art. The specification does not appear to disclose the embodiment of claim 86, which has two physical circuit packages and a single controller. These features must be shown or the feature(s) canceled from the claim(s).

C. Rejection of Claims 86-90 under 35 U.S.C. 112, first paragraph

(1) **Appellant's Argument:** Applicants asserts that the claimed invention of claim 86 is based upon the disclosure, at the time the application was filed, where it states "Thus, there is a need for a universal or comprehensive interface that...permits simultaneous sensing inputs and outputs (page 3, lines 10, 14 and 15)."

Examiner's Response: The examiner finds that the specification on page 3, lines 10, 14 and 15, which appellants rely on to support the claimed invention of claim 86, has not been given patentable weight because the passage is only for supporting the preamble of claim 86.

(2) **Appellant's Argument:** Applicants asserts that by way of the physical circuit

package 15, which comprises the mode circuits 16, applicants assert that the controller 14 does receive conditions (i.e., monitoring) from the sensors and sends commands (i.e., actions) to the actuators (see, for example page 4, lines 4-6). Also, as it is known by one skilled in the art, the status data received by the controller contains the conditions from the sensors and the sending command data from the controller contains the commands to the actuators.

Examiner's Response: The passage cited page 4, lines 4-6, of the specification refers to the controller is disclosed only to receive conditions from the sensors and sends commands to the actuators. However, it fails to provide proper support for the claim limitation recited in claim 86, "said controller being capable of simultaneously receiving a condition from each sensor and being capable of simultaneously sending commands to each actuator (emphasis added)."

(3) **Appellant's Argument:** Applicants asserts that applicants reconfirm that the claimed invention of claim 86 is that of the above-stated predominant configuration where a controller 14 (e.g., a PLC or a computer) is connected to (and thus, services) multiple interface cards (e.g., two physical circuit packages 15), where each physical circuit package 15 is individually connected (via individual terminals 101-T1 and 102-T2) to a separate sensor or a separate actuator.

Examiner's Response: The examiner finds that specification does not appear to disclose the controller is connected to multiple interface cards, and where each physical circuit package is individually connected to a separate sensor or a separate actuator.

Fig. 1 illustrates only one single physical circuit package 15. The disclosure makes no mention of multiple interface cards or two physical circuit packages. Therefore, the disclosure fails to provide proper support for this limitation of the claims.

D. Rejection of Claims 86-90 under 35 U.S.C. 112, second paragraph

(1) **Appellant's Argument:** Applicants asserts that the claimed invention of claims 86-90 distinctly claims subject matter found in the disclosure (see, for example, page 2, lines 4-6), which defines a comprehensive interface circuit for automatic control of machines and processes to require an external controller in electrical communication with individual electronic interfaces for each sensor and for each actuator. With this configuration, the controller simultaneously senses inputs and actuates outputs (see, for example, page 3, lines 14-15 and Fig. 1). As Fig. 1 illustrates, and as one skilled in the art of using such PLC configurations of this type knows, the communication between the controller and each sensor and each actuator is direct, exclusive and physical.

Examiner's Response: The passage, cited page 3, lines 14-15, which merely states "There is also a need for an interface that permits simultaneous sensing inputs and outputs." The passage and Fig. 1 do not show or disclose how each controller is capable of "*simultaneously*" receiving a condition from each sensor and capable of "*simultaneously*" sending commands to each actuator. For all of the reasons, the examiner maintains the rejection under 35 USC 112, second paragraph.

E. Rejection of Claims 86-90 under 35 U.S.C. 103(a)

(1) **Appellant's Argument:** Applicants asserts that clearly the 32 field devices 4 shown in McLeish's Fig. 1 are not a single sensor or a single actuator that is electrically connected directly, exclusively and physically to a physical circuit package of the claimed invention.

Examiner's Response: As stated in the final office action dated 8/8/05, the passage cited page 3, lines 4-12, of the specification is in direct contradiction to the limitation that each physical circuit package is "electrically connected directly, exclusively, and physically to a single sensor or a single actuator, but not both simultaneously." That is, the passage clearly implies that each physical circuit package is in fact capable of being connected to at least one sensor (input) and one actuator (output) simultaneously. Fig. 1 illustrates just such an embodiment. The disclosure makes no mention of a circuit which is limited to exclusively being connected to only one of a sensor or an actuator.

Moreover, on page 6, lines 13-19 of specification, which recites in part:

With reference to the embodiment of the invention in FIG. 1, **sensors** 70, such as **sensors** installed in industrial processes or machines, provide external controllers 14, frequently computers, with the information (typically via analog or digital electrical signals) upon which to base control decisions that are subsequently implemented by **actuators** 72. Embodiments of the inventive input/output Engine (I/O Engine) 15 provides a universal electronic interface between **a wide variety of sensors 70 and actuators 72** and sensor first and second pins, nodes, or connections 74, 75; and first and second actuator pins, nodes or connections 76, 77. **Each of the sensors and actuators** requiring only two terminals T1 101 and T2 102 of the I/O Engine interface.

The passage above also explicitly implies that each physical circuit package is in fact capable of being connected to at least one sensor and one actuator simultaneously.

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McLeish discloses a single sensor or a single actuator that is electrically connected directly, exclusively and physically to a physical circuit package (col. 7, lines 3-7, "sensing an analogue input into the input-output device 2, i.e., physical package from the Resistance Temperature Device or thermister 4, i.e., sensor"; col. 3, lines 46-51; col. 6, lines 18-26).

(2) **Appellant's Argument:** Applicants asserts that neither McLeish nor Sitte provide a controller which is capable of simultaneously receiving a condition from each sensor and capable of simultaneously sending commands to each actuator, as required by the claimed invention.

Examiner's Response: Appellant's arguments with respect to the limitation are addressed in 35 USC 112, first and second paragraphs above.

The examiner repeats again as stated in the final rejection that the specification, page 14, lines 25-27, which recites:

For each of the output modes corresponding input modes can be used simultaneously, specifically Mode 1 with Mode 2, Mode 4 with Mode 5 and Mode 6 with Mode 7. Within appropriate signal ranges different modes can be dynamically invoked **sequentially** (emphasis added).

This passage clearly suggests that the term "simultaneously" actually includes sequential operation of the modes. The Examiner notes that, as understood by one of ordinary skill in the art, sequential processing refers to the ability of a single processor to handle more than one task "simultaneously" by stepping through the different tasks in sequence. Parallel processing is another manner for handling multiple tasks simultaneously by handling each task on a separate processor. However, the disclosure

makes no mention of parallel processing and, indeed, discloses only a single processor in the controller. Therefore, the Examiner interprets that the term "simultaneously" includes sequential processing.

McLeish teaches a controller (MP 3, fig. 2) which is capable of simultaneously receiving a condition from each sensor and capable of simultaneously sending commands to each actuator (col. 3, lines col. 3, line 52 – col. 4, line 3; col. 2, lines 16-48, "sequentially sensing input signals from field devices or providing control output signals for controlling said field devices").

Sitte also discloses a controller (programmable logic controller, 12, fig. 1) which is capable of simultaneously receiving a condition from each sensor and capable of simultaneously sending commands to each actuator (fig. 1; col. 1, lines 20-37, "sensors or actuators are associated together to provide a control system...each device could possibly be connected individually to a central controller such as a programmable logic controller"; col. 7, lines 8-35, "when the device is an actuator that responds to commands from the PLC 12"; col. 17, lines 34-49).

(3) Appellant's Argument: Applicants asserts that Appellants assert that since Sitte is clearly directed to a bus topology, and the claimed invention claims the predominant PLC topology, clearly Sitte does nothing to overcome that shortcoming of McLeish.

Examiner's Response: In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., ***predominant PLC topology***) are not recited in the rejected

claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(4) Appellant's Argument (e1): Appellant asserts that since claim 86 is patentable over McLeish in view of Sitte, then claim 87, which depends directly from claim 86, is also patentable, at least on this basis. Consequently, claim 87 should be allowed over McLeish in view of Sitte.

Examiner's Response (e1): Claim 87 is properly rejected under 35 U.S.C. 103(a) for the same reasons cited above with respect to independent claim 86.

(5) Appellant's Argument (e2): Appellant asserts that claim 88 is patentable over McLeish in view of Sitte, as the inventions defined thereby are not suggested within either McLeish or Sitte, nor is there any suggestion or motivation to modify or combine these references' teachings in order to teach or suggest the claimed limitations, as required by 35 U.S.C. 103(a).

Examiner's Response (e2): Claim 88 is properly rejected under 35 U.S.C. 103(a) for the same reasons cited above with respect to independent claim 86.

(5) Appellant's Argument (e3): Appellant asserts that since claim 86 is patentable over McLeish in view of Sitte, then claim 89, which depends directly from claim 86, is also patentable, at least on this basis.

Examiner's Response (e3): Claim 89 is properly rejected under 35 U.S.C. 103(a) for the same reasons cited above with respect to independent claim 86.

(6) Appellant's Argument (e4): Appellant asserts that since claim 86 is patentable over McLeish in view of Sitte, then claim 90, which depends directly from claim 86, is also patentable, at least on this basis. Consequently, claim 90 should be allowed over McLeish in view of Sitte.

Examiner's Response (e4): Claim 90 is properly rejected under 35 U.S.C. 103(a) for the same reasons cited above with respect to independent claim 86.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jungwon Chang 

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